

U.S. Patent Application No. 09/833,202  
Amendment dated May 11, 2007  
Response to Office Action of February 12, 2007

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**REMARKS**

Reconsideration and continued examination of the above-identified application are respectfully requested.

The amendment to the claims involves incorporating the subject matter of claim 21 into claim 17 with the cancellation of claims 18, 21, and 23. Claim 24 has been amended so that it is dependent on claim 17. Accordingly, no questions of new matter should arise and entry of this amendment is respectfully requested.

**Rejection of Claims 3-7, 17-19, and 21-28 under 35 U.S.C. §102(e) – Yu et al.**

At page 3 of the Office Action, the Examiner rejects claims 3-7, 17-19, and 21-28 under 35 U.S.C. §102(e) as being anticipated by Yu et al. (U.S. Patent No. 6,399,202). The Examiner essentially relies on the previous positions regarding Yu et al., as set forth in previous Office Actions. The Examiner asserts that Yu et al. discloses gas diffusion electrodes having the particular characteristics of the recited claims and refers to particular portions of Yu et al. This rejection is respectfully traversed.

As stated above, claim 17 now incorporates the limitations of claim 21 of the present application. Claim 17 recites a fuel cell, wherein catalyst particles are attached or absorbed onto the modified carbon product. The active layer of the fuel cell of claim 17 thus comprises a carbon support that contains the modified carbon product, wherein catalyst particles are attached or absorbed onto the modified carbon product. As described, for instance, at page 9, beginning at line 5 of the present application, by having a metal catalyst attached or absorbed onto the modified carbon product, the metal catalyst is in very close proximity to the organic groups and thus makes it possible to form an active layer with a catalyst, proton conductor, and electron

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conductor in extremely close proximity to each other which permits excellent catalyst utilization.

Further, the Examples show the ability of the present invention to achieve excellent accessible catalyst surface area using a catalyst layer, which is formed with a modified carbon product, and having an attached or absorbed metal catalyst. Furthermore, in one embodiment, the catalyst preparation by attaching or absorbing a metal catalyst complex is further described in detail, for instance, beginning at page 35 of the present application. As can be seen, a cationic complex can be attached onto a modified carbon product that has an attached organic group and then the complex reduced, and this leads to the catalyst being attached or absorbed to the modified carbon product, which is quite useful as an active layer in a fuel cell.

Unlike the claimed invention, as recited in claim 17, Yu et al. does not teach an active layer comprising a carbon support, wherein the carbon support comprises at least one modified carbon product, wherein catalyst particles are attached or absorbed onto the modified carbon product. Yu et al. does not teach or suggest an attached or absorbed metal catalyst, nor does U.S. Patent No. 5,561,000 (also referred to by the Examiner since Yu et al. makes reference to this patent). The particular catalyst layer formed in U.S. Patent No. 5,561,000 is through a physical mixture of carbon powder with platinum metal (Pt) as, for instance, described at col. 4, lines 6-16 of U.S. Patent No. 5,561,000. There is no teaching or suggestion of a modified carbon product and there is no teaching or suggestion of a modified carbon product having attached or absorbed catalyst particles, nor is there a teaching or suggestion of catalyst particles being attached or absorbed through the use of a cationic metal catalyst complex.

In addition, Yu et al., in the sections cited by the Examiner in the Office Action, shows an active layer by mixing catalyst particles of Pt with carbon and, thus, this is a physical mixture. Furthermore, as described above, there is no teaching in Yu et al. of using a cationic metal

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catalyst complex to attach or absorb a metal catalyst onto a carbon product having attached at least one organic group. Each of the sections cited by the Examiner does not teach this embodiment. The reference to a cobalt-containing material at col. 13, lines 15-20 of Yu et al. is not a teaching of a metal catalyst that is attached or absorbed onto a modified carbon product having at least one organic group. As shown in Example 15 of Yu et al., a cobalt-containing macrocyclics was achieved by heating a carbon-supported material, wherein cobalt porphyrin was mixed with modified carbon product, which would be a physical mixture. The cobalt porphyrin is not a cationic metal catalyst complex. Thus, Yu et al. does not teach claim 17, nor the claims dependent on claim 17.

Accordingly, this rejection should be withdrawn.

**Rejection of Claims 17 and 26-28 under 35 U.S.C. §102(e) – Tosco et al.**

At page 8 of the Office Action, the Examiner rejects claims 17 and 26-28 under 35 U.S.C. §102(e) as being anticipated by Tosco et al. (U.S. Patent No. 6,881,511). The Examiner essentially relies on Tosco et al. in the same manner as in previous Office Actions. The Examiner makes reference to Examples 12-15 of Tosco et al., as well as other sections of Tosco et al., to reject these particular claims. This rejection is respectfully traversed.

Since claim 17 incorporates the subject matter of claim 21, and in view of all other claims being dependent, directly or indirectly, on claim 17, this rejection should be withdrawn since the subject matter of claim 21 was not included in this rejection.

**Rejection of Claim 17 under 35 U.S.C. §102(b) – Swathirajan et al.**

At page 10 of the Office Action, the Examiner rejects claim 17 under 35 U.S.C. §102(b)

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as being anticipated by Swathirajan et al. (U.S. Patent No. 5,316,871). The Examiner essentially relies on Swathirajan et al. in the same manner as in previous Office Actions. The Examiner asserts that the carbon groups contain carboxylic groups on the carbon surface. This rejection is respectfully traversed.

As stated above, claim 17 now incorporates the subject matter of claim 21, which was not included in this rejection. For at least this reason, this rejection should be withdrawn.

**Rejection of Claims 1, 8, 10, and 20 under 35 U.S.C. §103(a) -- Yu et al. in view of Watakabe et al.**

At page 11 of the Office Action, the Examiner rejects claims 1, 8, 10, and 20 under 35 U.S.C. §103(a) as being unpatentable over Yu et al. in view of Watakabe et al. (U.S. Patent Application Publication No. 2003/0198854 A1). The Examiner essentially relies on Yu et al. and Watakabe et al. in the same manner as in previous Office Actions. Further, the Examiner relies on the Examiner's comments of Yu et al. above in the §102 rejection. This rejection is respectfully traversed.

As stated above, claim 17 incorporates the subject matter of claim 21, which was not included in this rejection. Claims 1, 8, 10, and 20 are directly or indirectly dependent on claim 17. Accordingly, this rejection should be withdrawn for this reason alone.

In addition, as acknowledged by the Examiner, Yu et al. is prior art under 35 U.S.C. §102(e), and Yu et al. is assigned to Cabot Corporation, and the present application is assigned to Cabot Corporation. Accordingly, under 35 U.S.C. §103(c), due to a common assignee, Yu et al. is not prior art under 35 U.S.C. §103(a).

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**Statement of Common Ownership**

Yu et al. (U.S. Patent No. 6,399,202) and the present invention, as claimed, were, at the time the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person, namely Cabot Corporation, as reflected in the recorded Assignments for Yu et al. and the present application.

Accordingly, this rejection should be withdrawn.

**Rejection of Claims 1 and 20 under 35 U.S.C. §103(a) -- Tosco et al. and/or Swathirajan et al. and further in view Watakabe et al.**

At page 13 of the Office Action, the Examiner rejects claims 1 and 20 under 35 U.S.C. §103(a) as being unpatentable over Tosco et al. and/or Swathirajan et al. and further in view of Watakabe et al. The Examiner's reasoning for this rejection essentially relies on the previous comments made with regard to these references. This rejection is respectfully traversed.

As stated above, claims 1 and 20 are ultimately dependent on claim 17 and since claim 17 includes the recitation of claim 21, which was not part of this rejection, this rejection should be withdrawn.

**CONCLUSION**


In view of the foregoing remarks, the applicant respectfully requests the reconsideration of this application and the timely allowance of the pending claims.

If there are any fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged

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Respectfully submitted,



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